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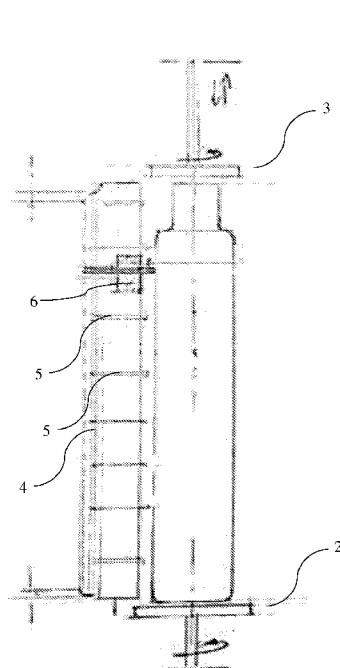
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(54) Title: A SYSTEM USED IN DESIGN APPLICATIONS

Figure 1



(57) Abstract: The present invention relates to a system for use in glass
production technology such as for production of glass packaging, glass-
ware, glass home equipments, wherein said system allows all kinds design
additions such as color, pattern, texture, decor, seal and form changing
processes to be applied to the product without requiring re-firing of the
product, after removal of the product from the moulds in the production
lines while the product is still hot and the temperature is kept constant.



A SYSTEM USED IN DESIGN APPLICATIONS

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Technical Field

The present invention relates to a system for use in glass production technology such as for production of glass packaging, glassware, glass home equipments, wherein said system allows all kinds design additions such as color, pattern, texture, decor, seal and form changing processes to be applied to the product without requiring re-firing of the product, after removal of the product from the moulds in the production lines while the product is still hot and the temperature is kept constant.

15 Prior Art

Automatic glass production technology is a structure in which the glasses are automatically produced, cooled in post-production cooling ovens, post-cooled packaging processes are carried out, or sent to the décor section for pattern or color applications to be made on the glasses. The transmission of glass to the décor area for design applications after the production and cooling process gives rise to a second process. This secondn process arises from the requirement of re-firing of the glass for fixing of the decor and the dye according to their heat acceptance.

25 Turkish patent document TR 2006/03789 mentions the production method of colored mosaic tinted glass, which is used as interior and exterior decorative facade covering material in bathrooms, kitchens, halls and pools and the production method of this mosaic. The production method described in the document includes steps of glass cutting and belevelling, first firing, first coloring, foliar application, second coloring, second firing, application of base primer, third firing, filing and packaging.

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Chinese patent document CN 104513025 discloses a method for processing a decorative glass plate. In this document, the process of glass plate processing includes the steps of cutting and glazing of patterned flat glass, enameling, sand blasting, glass firing. The present invention discloses that the process of producing decorative decorative glass has
5 bright color, three-dimensional effect, distinctive decorative effect, easy and simple technology, high production efficiency, quick product update and wide scope advantages.

Brief Description of the Invention

10 The present invention aims to realize to a system for use in glass production technology such as for production of glass packaging, glassware, glass home equipments, wherein said system allows all kinds design additions such as color, pattern, texture, decor, seal and form changing processes to be applied to the product after removal of the product
15 from the moulds in the production lines while the product is still hot and the temperature is kept constant.

Another object of the invention is to realize a system that enables the desired designs to be obtained by making all kinds of designs, colors, textures and seals on the product lines, by using the product on the line based on the temperature of the products after
20 removal of the product from the mould and its transfer to the production line.

Another object of the invention is to realize a system in which it is possible to make design additions to each desired place on the product with the help of the adjustable color and design reservoir present in said system.
25

Another object of the invention is to implement a system in which changes to the product form can be made and the product can be placed back into the production line.

Another object of the invention is to realize a system which can be adapted to any kind of
30 glass production line.

Detailed Description of the Invention

"A system used in design applications" realized for achieving the aim of the invention is shown in the attached figures and disclosure of each figure is listed below.

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Figure 1. The appearance of the construct that is used to keep the product warm in the system according to present invention.

Figure 2. The appearance of the sprayers used for design applications to be made on the product in the system according to present invention.

10 Figure 3. The appearance of the removal of the product from the production line for making design applications and then replacement of the product back into the production line in the system according to present invention.

The parts in the figures are numbered individually and their correspondences are given
15 below.

1. System
2. Holder
3. Stabilizer
- 20 4. Heating element
5. Air ducts
6. Relief mold
7. Sprayer
8. Color reservoir
- 25 H: Line

A system (1) according to invention for use on the production line, for addition of design elements to hot products ejected from the glass production line, wherein said system (1) comprises

- at least one rotatable holder (2) that is in connection with the product flow on the production line (H), for receiving the product from the line for design application and then after design additions replacement of the product to the line (H)
- at least one rotatable stabilizer (3) that stabilizes the product removed by the rotatable holder (2) by fastening the product on the rotatable holder (2)
- at least one heating element (4) for keeping the product fixed by the holder (2) and the stabilizer (3) at a constant temperature,
- at least one relief mold (6) located on the heating element (4) wherein said relief mold (6) performs the embossing operations on the product and moves back and forth towards the product,
- at least one sprayer (7), which applies color and patterning on the product fixed on the holder (2) with the stabilizer (3) and on the product moving on the line (H)
- one or more color reservoirs (8) connected to the sprayer (7) in which and the colors required for color and pattern applications to be applied on the product with the sprayer (7) are stored, and
- at least one control unit (not shown in the figures) wherein the commands for design applications that will be carried on the product that is moving on the production line (H) and product removed from the production line (H) are submitted and which in accordance with these commands arranges that working of the holder (2), stabilizer (3), heating element (4), relief mold (6), sprayer (7) and color reservoirs (8) and thus controlling the application of the desired design element on the product.

In the system (1) according to the invention the holder (2) is the element which takes up the hot products from the production line (H) in order to make design applications. The holder (2) is rotatable and the product is made ready for application of the design by movement of the stabilizer (3) on the holder (2) towards the product and fixing it on the holder.

In a preferred embodiment of the system (1) according to present invention, the stabilizer (3) fixes the product through its movement towards the holder (2) when the product is on the holder (2), and releases the product for transfer to the production line (H) through its

movement away from the holder (2)The stabilizer (3) moves together with the holder (2) thus allowing the design additions to be made on all surfaces of the product.

In the system (1) according to the invention (1), the heating element (4), which is used to
5 keep the product at a fixed or desired temperature, comprises air ducts (5) through which hot air is passed. This way, the temperature of the heating element (4) is controlled.The relief mold (6) is located on one of the air ducts (5)The relief mold (6) is able to move towards and away from the product on the heating element (4).In the system (1) according to the invention, the heat that is going to be applied to the product through the
10 heating element (4) can be programmed from control unit.

In the system (1) according to invention, the sprayer (7) comprises rotating nozzles that can rotate 360 o.The sprayers (7) can apply the desired colors and designs to the product as programmed from the control unit, with the help of these rotating nozzles.The nozzles
15 of the sprayer (7) have variable tips.In a preferred embodiment of the invention, the nozzles of the sprayer (7) communicate with the color chambers (8) via channels.

In the system (1) of the invention, the color reservoirs (8) are connected to the nozzles (7) via channels and transmit color or color mixtures to the nozzles of the sprayer (7)
20 depending on the design application submitted to the control unit. The color reservoirs (8) are in a programmable structure and the mixing of the colors in the reservoirs (8) is also carried out.

In the system (1) of the invention, the control unit performs the desired operation to the
25 product on the line (H), if it is desired to make a design on a single surface of the product.If it is desired to make a design to all surfaces of the product or to a controlled area on the product, then the holder (2) and the stabilizer (3) receives the product and provides rotating motion of the product so that the design application can be made to the side or bottom surface of the product with the help of the sprayer (7) and/or relief mold
30 (6) while the product is kept at a constant temperature with the use of the heating element (4).The inventive system (1) further comprises a laser applicator controlled by the control

unit. This way, laser application on the product can be realized. The control unit also performs form/structure changes on the product.

5 With the system (1) according to invention, on the glass production line (H) after removal of the product from the mold and while the product is still hot, design additions such as color, texture, design, seal are made. As the product is proceeding on the line (H) while the product is still hot, if a design application to only one side of the product is requested control unit makes desired design addition to the product without disturbing the production line (H) flow. If it is desired to make a design to all surfaces of the product or
10 to a controlled area on the product, then the holder (2) receives the product and fixes with the stabilizer (3) and by controlling the rotating motion keeps the product at a constant temperature with the help of the heating element (4). The control unit provides addition of the design to desired surfaces with the relief mold (6) and/or sprayer (7) The control unit returns the product to the line (H) after the design joint has been made. In this way, with
15 the system (1), it is possible to make the necessary design additions on the product without the product loses the temperature it has when it was ejected from the mould..

Around the basic concepts, it is possible to develop a wide variety of applications for the invention "a system (1) used in design applications" and the invention can not be limited
20 to the examples described here, it is essentially as indicated in the claims.

CLAIMS

1. A system (1) for use on the production line (H), for addition of design elements to hot products ejected from the glass production line (H), wherein said system (1) comprises
- 5
- at least one rotatable holder (2) that is in connection with the product flow on the production line (H), for receiving the product from the line for design application and then after design additions replacement of the product to the line (H)
 - at least one rotatable stabilizer (3) that stabilizes the product removed by the rotatable holder (2) by fastening the product on the rotatable holder (2)

10

 - at least one heating element (4) for keeping the product fixed by the holder (2) and the stabilizer (3) at a constant temperature,
 - at least one relief mold (6) located on the heating element (4) wherein said relief mold (6) performs the embossing operations on the product and moves back and forth

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 - towards the product
 - at least one sprayer (7), which applies color and patterning on the product fixed on the holder (2) with the stabilizer (3) and on the product moving on the line (H)
 - one or more color reservoirs (8) connected to the sprayer (7) in which and the colors required for color and pattern applications to be applied on the product with the

20

 - sprayer (7) are stored, and
 - at least one control unit wherein the commands for design applications that will be carried on the product that is moving on the production line (H) and product removed from the production line (H) are submitted and which in accordance with these commands arranges that working of the holder (2), stabilizer (3), heating element (4),

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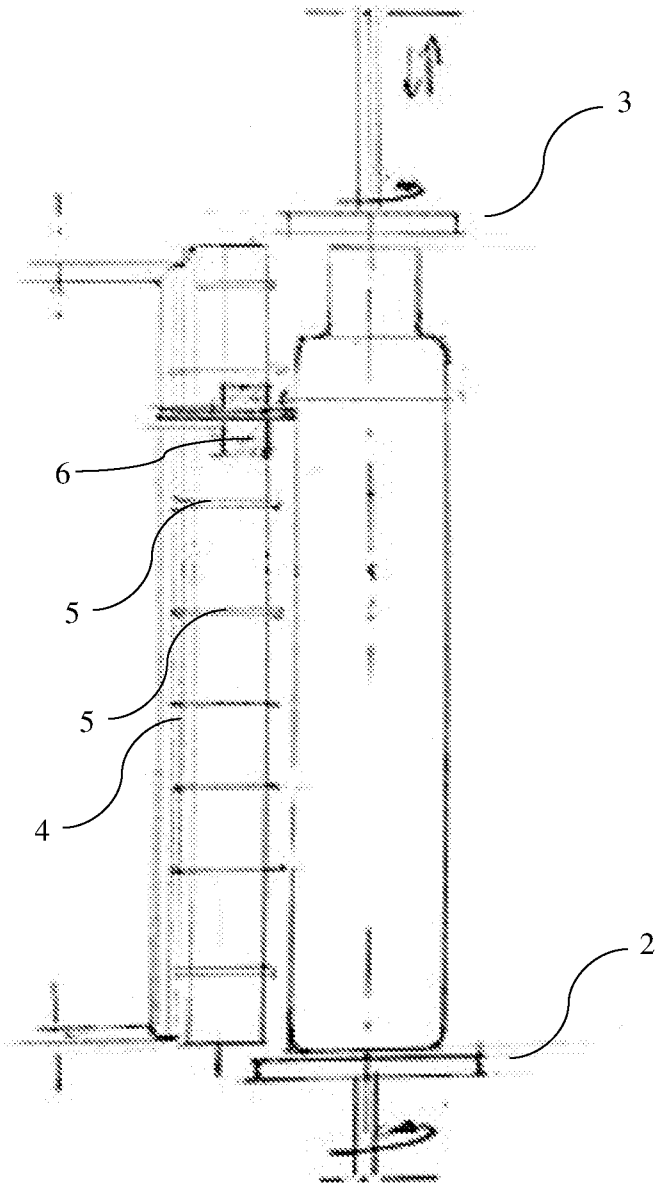
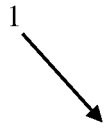
 - relief mold (6), sprayer (7) and color reservoirs (8) and thus controlling the application of the desired design element on the product.
2. A system according to claim 1 characterized in that the stabilizer (3) fixes the product through its movement towards the holder (2) when the product is on the holder (2),
- 30
- and releases the product for transfer to the production line (H) through its movement away from the holder (2)

3. A system (1) according to claim 1 or 2 characterized in that the heating element (4) comprises air ducts (5) from which hot air pass through.
- 5 4. A system according to claim 3, characterized in that the air ducts (5) comprise relief mold (6) on them.
5. A system according to any of the preceding claims characterized in that the heat that will be given to the product with the heating element (4) is programmed through the control unit.
- 10 6. A system according to any of the preceding claims, characterized in that the sprayer (7) comprises nozzles that can rotate 360°.
7. A system (1) according to claim 6 characterized in that the sprayer (7) has nozzles that has variable tips.
- 15 8. A system (1) according to any of the preceding claims characterized in that color reservoirs (8) are connected to the nozzles (7) via channels and transmit color or color mixtures to the nozzles of the sprayer (7) depending on the design application submitted to the control unit.
- 20 9. A system (1) according to any of the preceding claims characterized in that the color reservoirs (8) are programmable and color mixing can be carried out in said reservoirs.
- 25 10. A system according to any of the preceding claims characterized in that the control unit performs the desired operation to the product on the line (H) if it is desired to make a design on a single surface of the product.
- 30 11. A system according to any of the preceding claims characterized in that the control unit realizes application of the design to all surfaces of the product or to a controlled

area on the product by the holder (2) and the stabilizer (3) receiving the product and providing rotating motion of the product so that the design application can be made to the side or bottom surface of the product with the help of the sprayer (7) and/or relief mold (6) while the product is kept at a constant temperature with the use of the
5 heating element (4).

10

Figure 1



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Figure 2

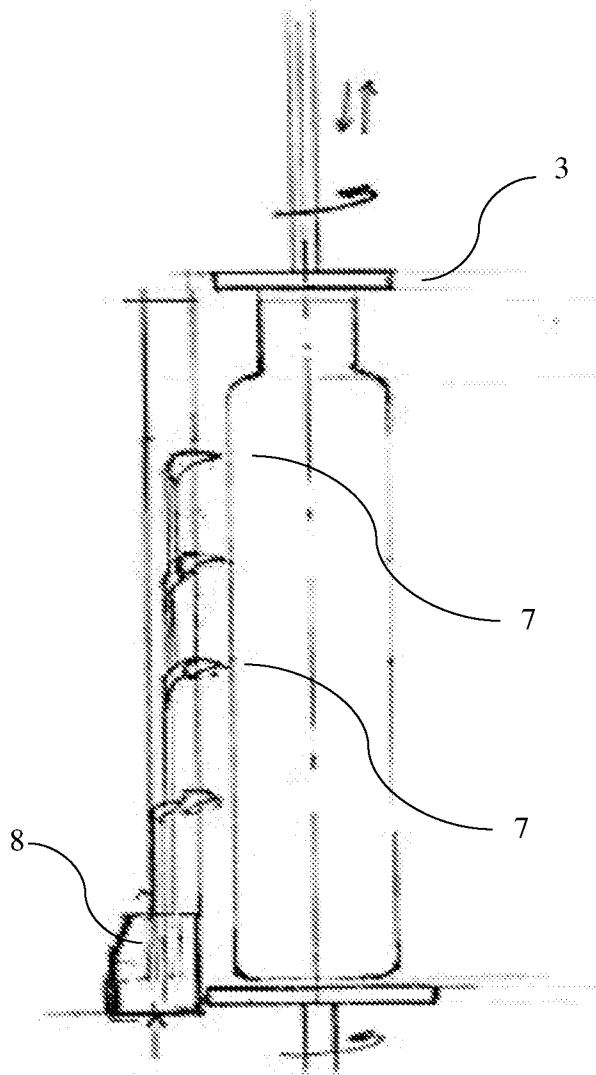


Figure 3

